Damage Control Rapid Plotting

Enabling Objectives

1 Select statements which describe the purpose of DC diagrams, status boards and logs

2 Record casualties on isometric DC diagrams

3 Given a DC scenario record damage control messages

4 Match damage control symbols to the situation they represent

Failure to Communicate

Crew interviews and analysis of plots and handwritten messages after casualties on USS Samuel B. Roberts, USS Stark and USS Cole revealed:

- Improper use of complex triangle symbology
- Damage control decision makers had limited knowledge of sequential actions to combat casualties
- Minimal crew training on symbology
- Improper display of information on message blanks

- Challenge: Reduce the complexity of triangle symbology

- Solution: Rapid Plotting Symbology, DCAMS

Initiatives to Improve DC Plotting

- Rapid plotting symbology
- Rapid plotting message blanks
- DC casualty checklists
- DCAMS (Damage Control Action Management Software)
- Shipboard flag training kits

Rapid Plotting Symbology

- Replace triangle symbology
- Simplifies plotting
- Improves display of symbology on DC plates
- Will appear in revision of NSTM 079, vol. 2, Practical Damage Control

Damage Control Rapid Plotting

- Universal symbology standard of circle and slashes combined with simplified plotting requirements.
  - The circle and slash system eliminates the requirement to have several flags on the side of the triangle.
  - Simplified plotting requirements are accomplished with check sheets.

Damage Control Rapid Plotting

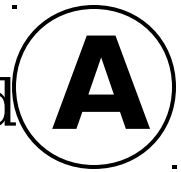
- Check sheets similar to the Main Space Fire Doctrine will replace the “cluttered” plotting details that obscure the big picture of the ships condition with noise.
  - Check sheets are designed to provide guidance through the casualty process, track and document details and events.
  - Check sheets eliminate the requirement to plot things such as mechanical and electrical isolation.
  - Checklist examples can be found at www.dcfp.navy.mil as DC Tricks of the Trade #007 in the Library

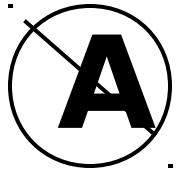
Rapid Plotting Symbology

Three symbols represent key events in a casualty.

Example for Class Alpha fire:

Casualty Reported

Casualty Engaged 

No Casualty
(Fire is out.) 

Rapid Plotting Symbology

Example for ruptured piping:

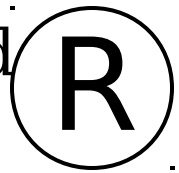
Casualty Reported

R

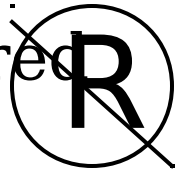
System

FM

Casualty Engaged



No Casualty
(Rupture is repaired
or bypassed.)



NSTM 079 & DCAMS 5.02 Casualty Icons

Fire (unspecified)

Reported, Engaged, No

Fire (Class A)

Reported, Engaged, No

Fire (Class B)

Reported, Engaged, No

Fire (Class C)

Reported, Engaged, No

Fire (Class D)

Reported, Engaged, No

Smoke (unknown)

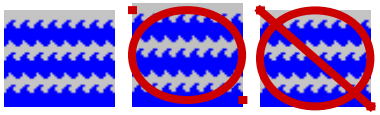
Reported, Engaged, No

Black Smoke

Reported, Engaged, No

White Smoke

Reported, Engaged, No



Flooding

Reported, Engaged, No

Heat Transfer

Reported

Hole in Deck - Below

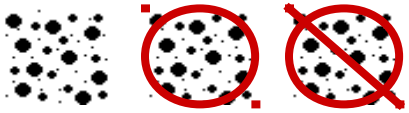
Reported, Engaged, No

Hole in Deck - Over

Reported, Engaged,

Hole in Bulkhead

Reported, Engaged, No



Fragmentation

Reported, Engaged, No

Debris

Reported, Engaged, No

NSTM 079 & DCAMS 5.02 Casualty Icons

Rupture

Reported, Engaged, No

AFFF Rupture

Reported, Engaged, No

Rupture-Potable Water

Reported, Engaged, No

Rupture - Fire Main

Reported, Engaged, No

Rupture - Chill Water

Reported, Engaged, No

Rupture - Steam

Reported, Engaged, No

Rupture- Fuel Oil

Reported, Engaged, No

Rupture- Electrical Cooling Water

Reported, Engaged, No

Rupture- Salt Water

Reported, Engaged, No

Rupture- JP5

Reported, Engaged, No

Rupture- Hydraulic Oil

Reported, Engaged, No

Rupture-Lube Oil

Reported, Engaged, No

Rupture-Pressurized Air

Reported, Engaged, No

NSTM 079 & DCAMS 5.02 Casualty Icons

Point of Impact

Reported, Engaged, No

Communications Lost

Reported, Engaged, No

Chemical Hazard

Reported, Engaged, No

Structural Damage

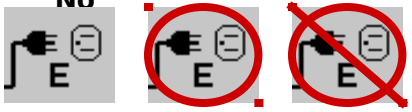
Reported, Engaged, No

Mechanical Failure

Reported, Engaged, No

Biohazard

Reported, Engaged, No



Electrical Power Lost

Reported, Engaged, No

Mechanical Damage

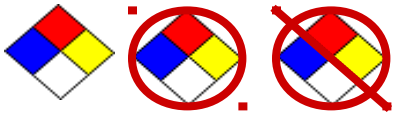
Reported, Engaged, No

Radiation Hazard

Reported, Engaged, No

Electrical Damage

Reported, Engaged, No



HAZMAT/Toxic Spill

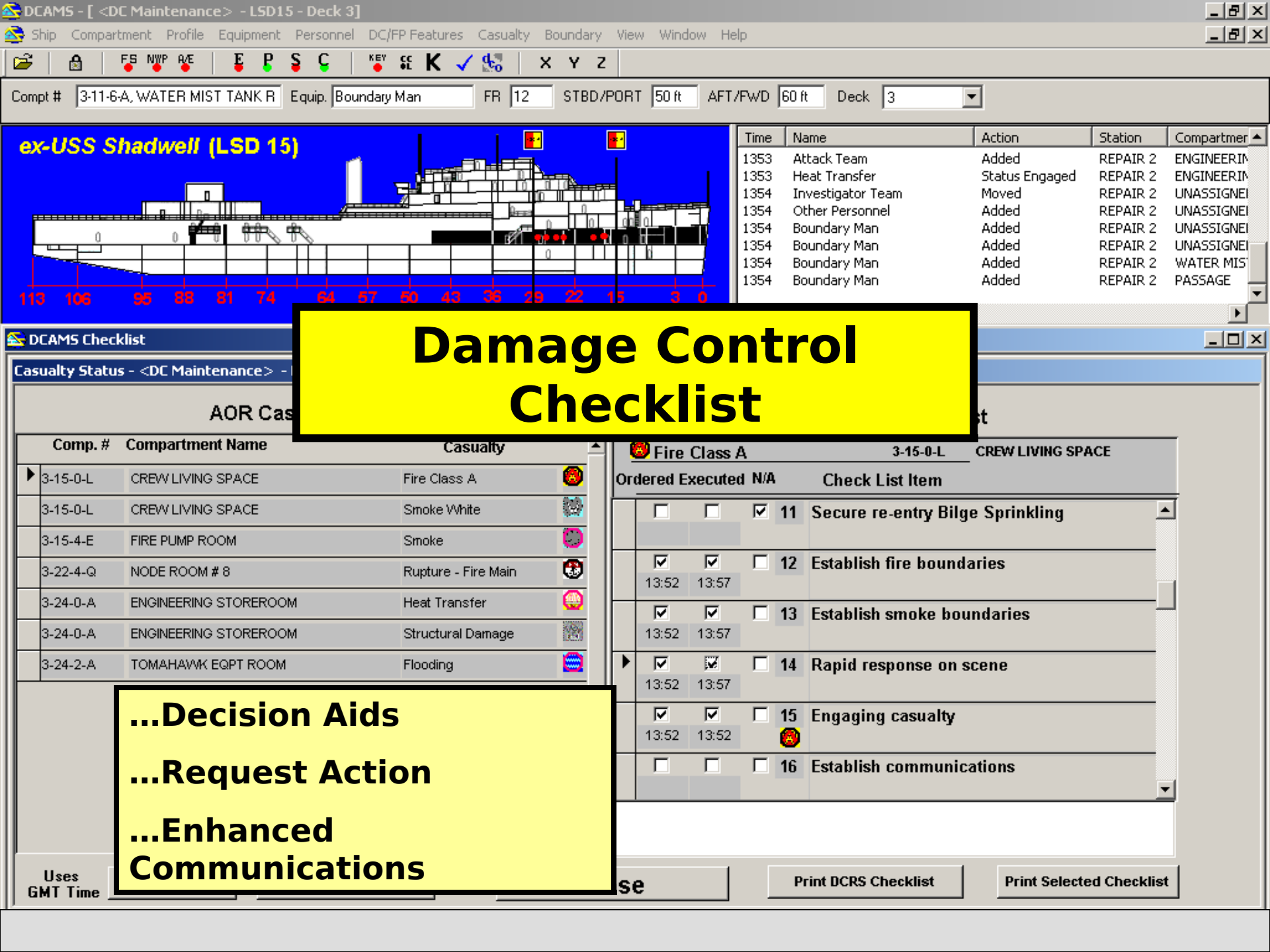
Reported, Engaged, No

Casualty Power Lost

Reported, Engaged, No

Unexploded Ordnance

Reported, Engaged, No


DCAMS - [<DC Maintenance> - LSD15 - Deck 3]
Ship Compartment Profile Equipment Personnel DC/FP Features Casualty Boundary View Window Help
Compt # 3-11-6-A, WATER MIST TANK R Equip. Boundary Man FR 12 STBD/PORT 50 ft AFT/FWD 60 ft Deck 3
ex-USS Shadwell (LSD 15)
113 106 95 88 81 74 64 57 50 43 36 29 22 15 3 0
Time Name Action Station Compartmer
1353 Attack Team Added REPAIR 2 ENGINEERIN
1353 Heat Transfer Status Engaged REPAIR 2 ENGINEERIN
1354 Investigator Team Moved REPAIR 2 UNASSIGNEI
1354 Other Personnel Added REPAIR 2 UNASSIGNEI
1354 Boundary Man Added REPAIR 2 UNASSIGNEI
1354 Boundary Man Added REPAIR 2 UNASSIGNEI
1354 Boundary Man Added REPAIR 2 WATER MIST
1354 Boundary Man Added REPAIR 2 PASSAGE
Damage Control Checklist
DCAMS Checklist
Casualty Status - <DC Maintenance> -
AOR Cas
Comp. # Compartment Name Casualty
3-15-0-L CREW LIVING SPACE Fire Class A
3-15-0-L CREW LIVING SPACE Smoke White
3-15-4-E FIRE PUMP ROOM Smoke
3-22-4-Q NODE ROOM # 8 Rupture - Fire Main
3-24-0-A ENGINEERING STOREROOM Heat Transfer
3-24-0-A ENGINEERING STOREROOM Structural Damage
3-24-2-A TOMAHAWK EQPT ROOM Flooding
Fire Class A 3-15-0-L CREW LIVING SPACE
Ordered Executed N/A Check List Item
11 Secure re-entry Bilge Sprinkling
12 Establish fire boundaries 13:52 13:57
13 Establish smoke boundaries 13:52 13:57
14 Rapid response on scene 13:52 13:57
15 Engaging casualty 13:52 13:52
16 Establish communications
...Decision Aids
...Request Action
...Enhanced Communications
Uses GMT Time
Print DCRS Checklist
Print Selected Checklist

Shipboard Flag Training Kits

- Damage Control Training Teams / Afloat Training Groups use the standardized kits to nonverbally initiate and conduct damage control drills.
- Flags have Rapid Plotting Symbology printed on them to alert Investigators and other shipboard personnel to specific casualties.
- Provides crew with continuous exposure to Rapid Plotting Symbology.

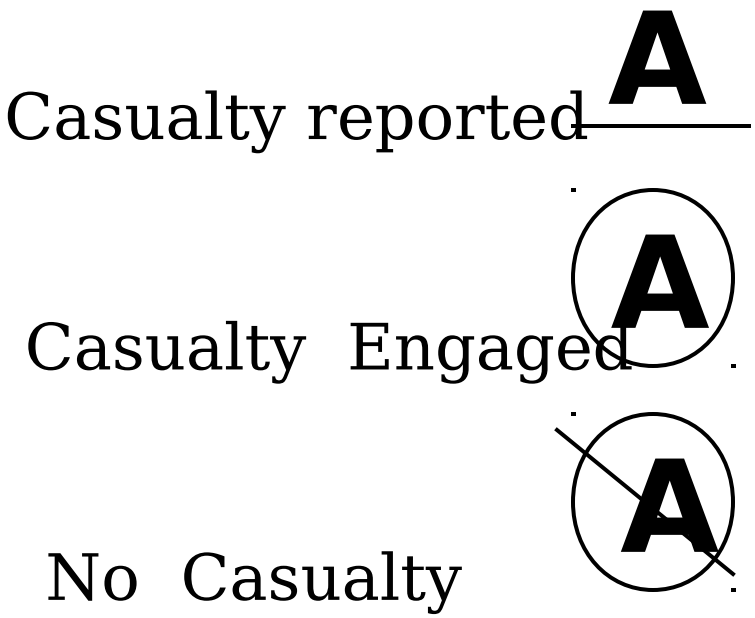
Rapid Plotting Message Blanks

- Rapid plotting message blanks and DC plates will be used as a backup if Automated Damage Control Software or wireless communications fail.

- Rapid plotting message blanks use three symbols instead of the six symbols employed with the triangle system.

Mechanics of plotting Casualties

Three primary reports are recorded on the DC plates 2 &3 that represent the key events in the casualty:



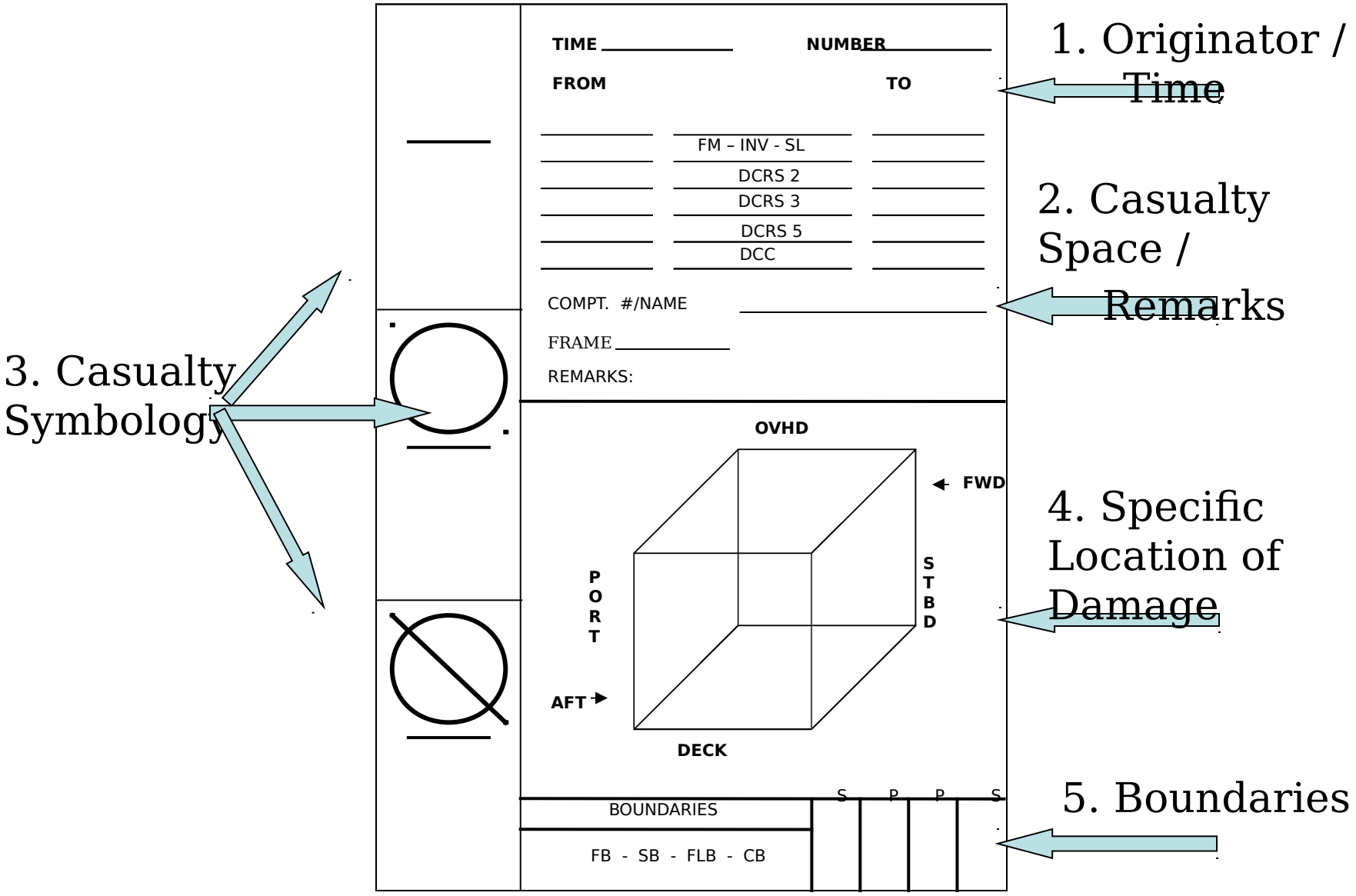
Mechanics of plotting (cont)

- Message blank
  - Time and sequential number
  - Who it is from and to whom it is going
  - Compartment number, frame number, remarks etc..
  - Damage must be pinpointed (Port/Stbd, Deck/ Ovhd, Fwd/Aft)
  - Fire/smoke/flooding boundary reports shall have primary and secondary boundaries listed

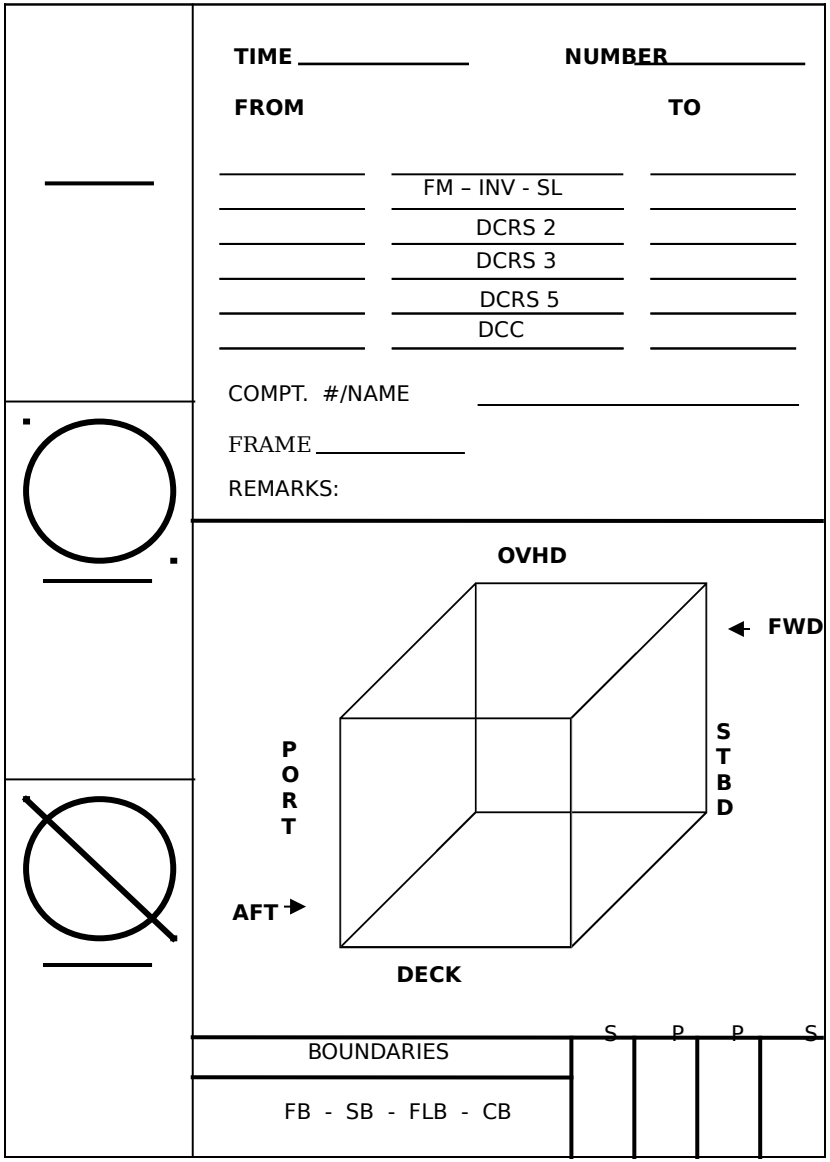
Mechanics of plotting (cont)

- Installed system messages require the following
  - System (Halon, AFFF, APC, Bilge Spr, CMWD)
  - Time activated/released, secured
  - Group number (if required)
- Ruptured piping messages shall contain
  - Cut-out valve(s) used
  - System if known
  - Affected system(s)

Five Sections of the Rapid Plotting Message Blank



Rapid Plotting Message Blank

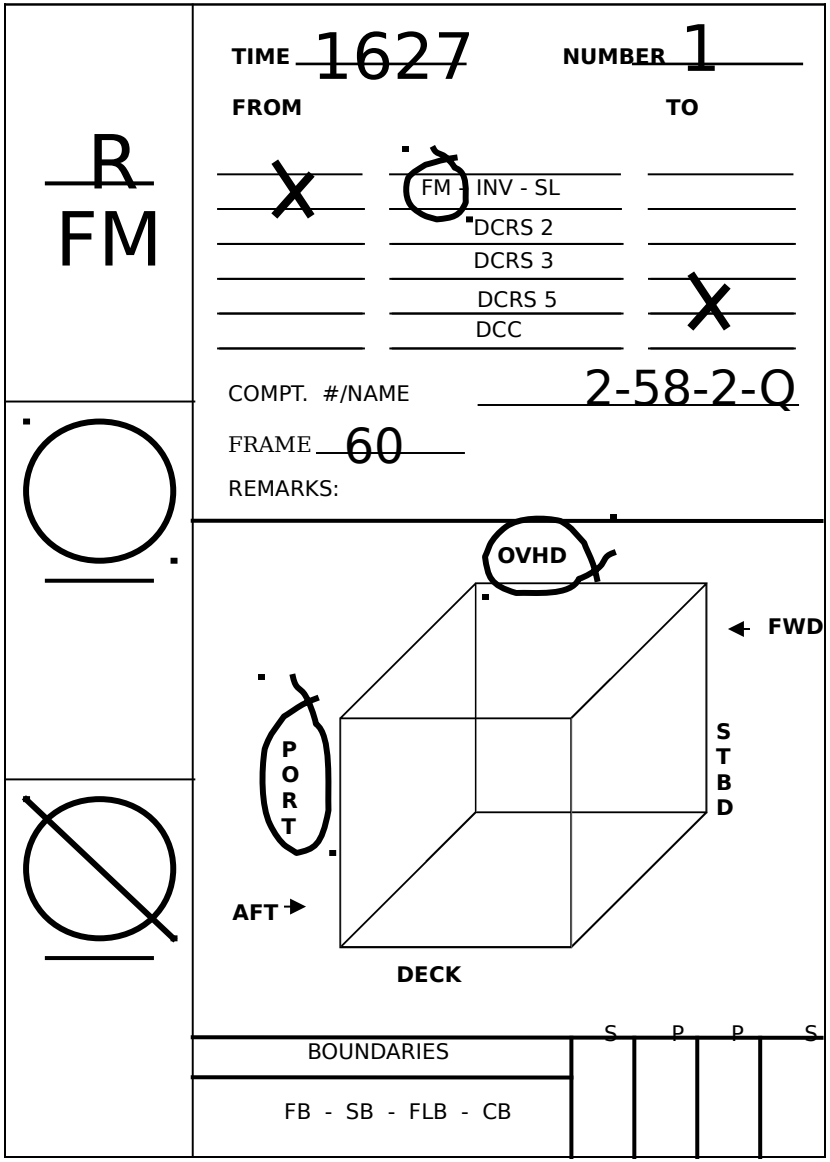


Rapid plotting message blanks must be tailored in section 1 to your specific ship

Reverse Side of Message Blank

REPORT or CASUALTY	SYMBOL	REQUIRED SUPPLEMENTAL INFO	—	◯	⊘
FIRE BOUNDARIES	FB	PRIMARY AND SECONDARY	Ordered	Set	N/A
SMOKE BOUNDARIES	SB	PRIMARY AND SECONDARY	Ordered	Set	N/A
FLOODING BOUNDARIES	FLB	PRIMARY AND SECONDARY			
CASUALTY BOUNDARIES	CB	PRIMARY AND SECONDARY	Ordered	Set	N/A
FIRE	A, B, C, D		Reported	Engaged	No
SMOKE	S	COLOR AND REMOVAL METHOD	Reported	Engaged	No
FIRE EXTINGUISHING SYSTEM	FES	SYSTEM TYPE	Manned	Engaged	No
FLOODING	FL	CLEAN / CONTAMINATED / DEPTH / REMOVAL METHOD	Reported	Engaged	No
FIREFIGHTING WATER	FFW	DEPTH / REMOVAL METHOD	Reported	Engaged	No
PROGRESSIVE FLOODING	PFL	RATE	Reported	Engaged	No
RUPTURED PIPING	R	TYPE SYSTEM	Reported	Engaged	No
STRUCTURAL DAMAGE	STR	SAG / PANT / TYPE SHORING	Reported	Engaged	No
JAMMED ACCESS	J	FITTING TYPE AND NUMBER	Reported	Engaged	No
HOLE	H	SIZE	Reported	Engaged	No
COMPARTMENT DEMOLISHED	CD		Reported	N/A	N/A
NO APPARENT DAMAGE	NAD		Reported	N/A	N/A
COMMS LOST	T	CIRCUIT	Reported	Engaged	No
ELECT PWR LOST	E		Reported	Engaged	No
ELECT DAMAGE	ED	EQUIPMENT	Reported	Engaged	No
CAS PWR ORDERED	CP		Reported	Engaged	No
CAS PWR LOST	CPL		Reported	Engaged	No
MECHANICAL FAILURE	M	EQUIPMENT / SYSTEM	Reported	Engaged	No
MECHANICAL DAMAGE	MD	EQUIPMENT / SYSTEM	Reported	Engaged	No
PERSONNEL CASUALTY	P	NAME / BILLET IF KNOWN	Reported	Engaged	No
WEAPON CASUALTY	WPN	TYPE WEAPON	Reported	Engaged	No
TOXIC GAS	TOX	HAZARD IF KNOWN	Reported	Engaged	No
CHEMICAL CONTAMINATION	CHM	AGENT IF KNOWN / LOCATION	Reported	Engaged	No
BIOLOGICAL CONTAMINATION	BIO	AGENT IF KNOWN / LOCATION	Reported	Engaged	No
RADIOLOGICAL CONTAMINATION	NUC	INTENSITY IF KNOWN / LOCATION	Reported	Engaged	No

Addressing the Message



Sent at1627

First message of the set

TIME 1627 **NUMBER** 1

FM= Fire Marshal
INV=Investigator
SL= On Scene Leader

FROM **TO**

FM - INV - SL
DCRS 2
DCRS 3
DCRS 5
DCC

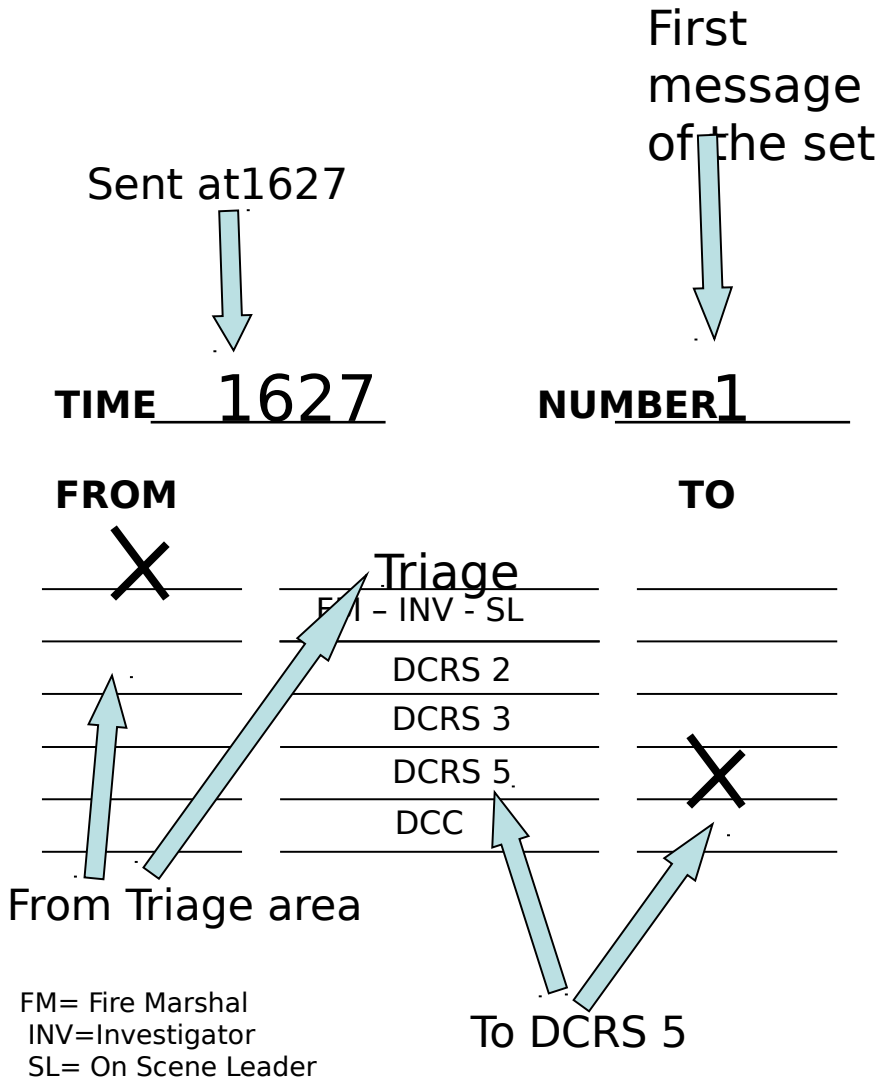
From the Fire Marshal

To DCRS 5

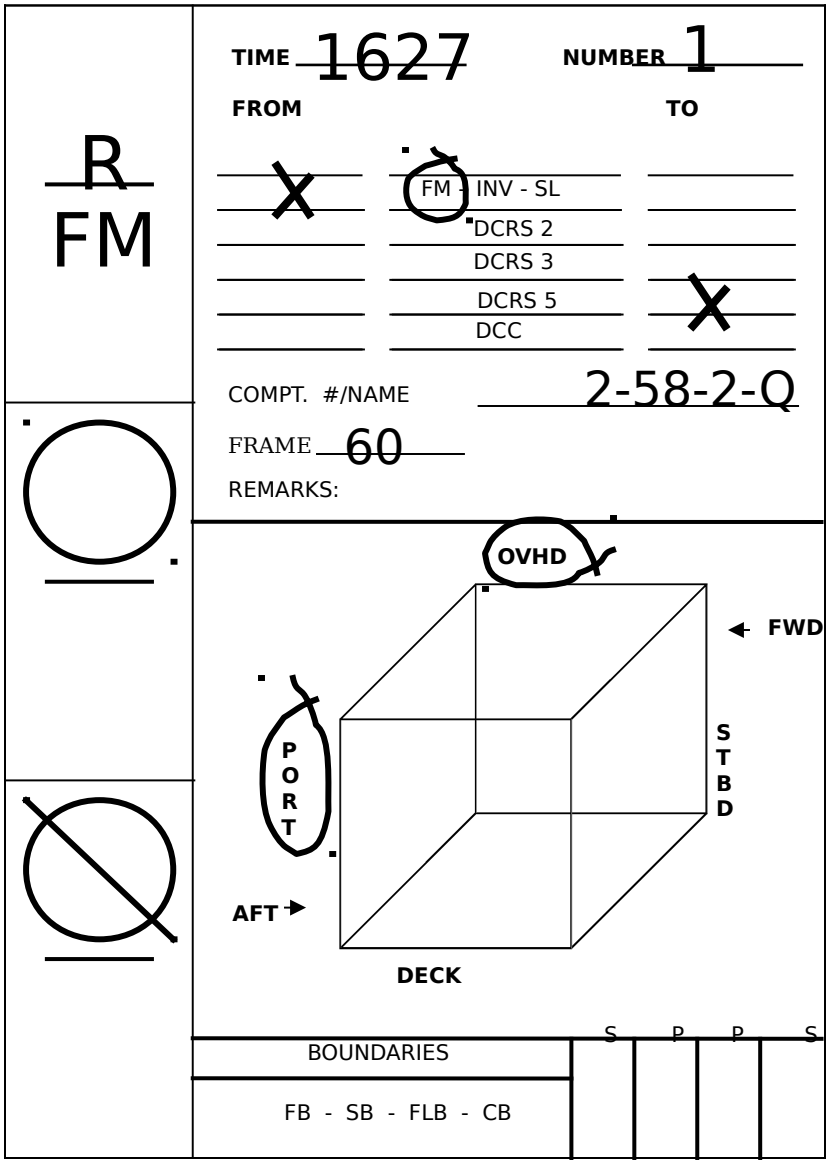
Addressing Others

Other Teams / Locations

- Bridge
- Medical / Triage
- CCA
- Decon stations
- Air staging area
- Hangar
- Weather deck
- Secondary DCC
- Secondary Conn



Casualty Space / Frame / Remarks



Compt. # / Name 2-58-2-Q

FRAME 60

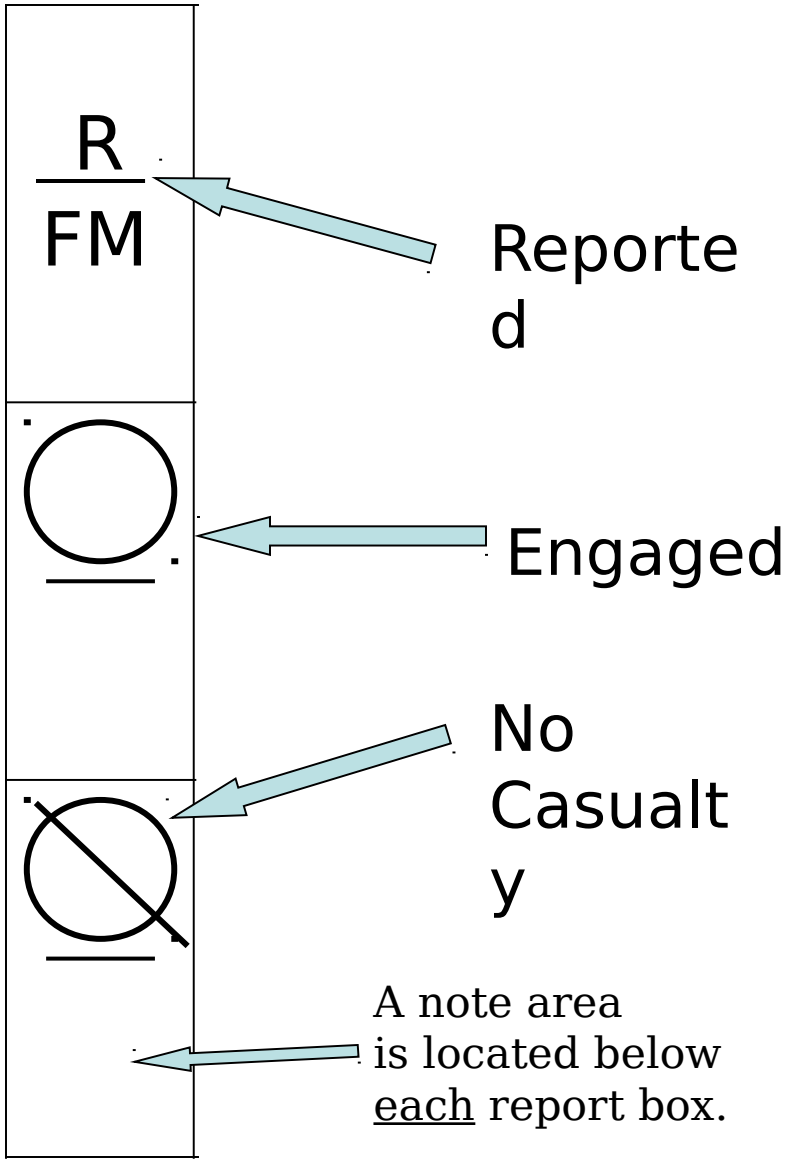
REMARKS:

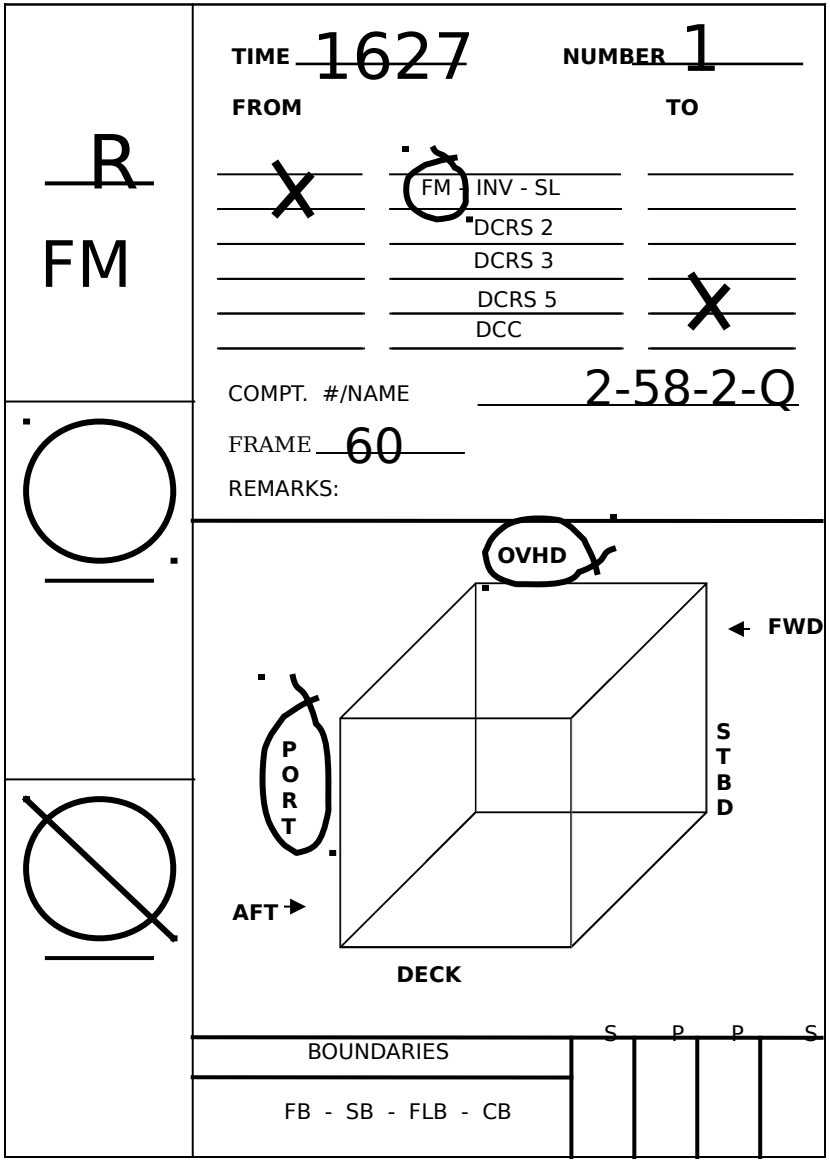
At Frame 60

In space 2-58-2-Q

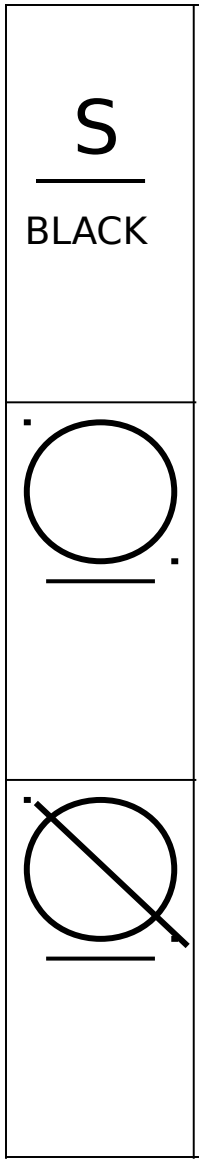
Casualty Space / Remarks Section

Casualty Symbology





Note Area



Write amplifying information in the Note Area. Acceptable information includes, but is not limited to:

- Smoke : List color of smoke

- Fire extinguishing system: List system type, time manned, time activated / secured

- Flooding: List depth (in feet and inches), dewatering equipment used, if water is clean or contaminated

- Firefighting water: List depth (in feet and inches) and dewatering equipment used or recommended

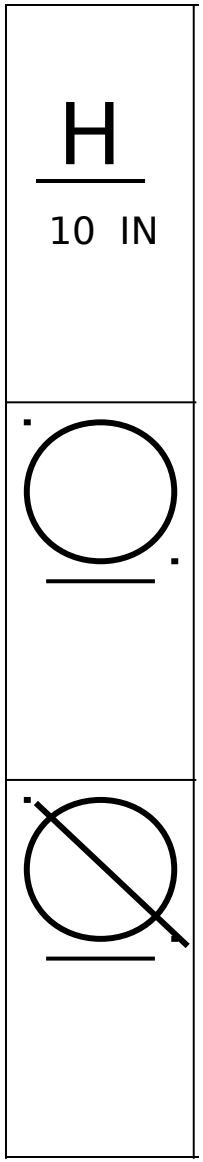
- Progressive flooding: List depth of water (in feet and inches) and dewatering equipment used or recommended, approximate rate of water entering

- Ruptured piping system: List system type, cut out valve numbers, sys effected

- Structural damage: List type of damage and recommended shoring used

- Jammed fitting: List fitting number and type

Note Area (cont)



Hole: List size of hole (in feet and inches)

- Communications lost: List circuit(s)
- Electrical damage: List equipment or system
- Mechanical failure: List equipment or system
- Personnel casualty: List person's name and billet (if known)
- Weapon casualty: List weapon type
- Toxic gas: List hazard (if known)
- Chemical contamination: List agent (if known) and location
- Biological contamination: List agent (if known) and location
- Radiological contamination: List intensity (if known) and location

R

FM

TIME 1627 NUMBER 1

FROM TO

X

FM - INV - SL

DCRS 2

DCRS 3

DCRS 5

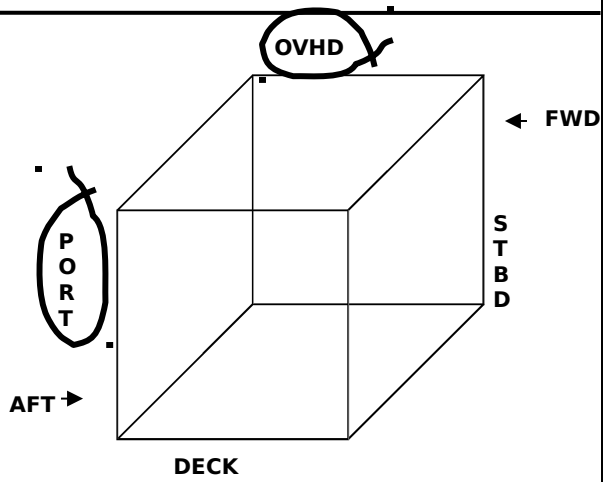
DCC

X

COMPT. #/NAME 2-58-2-Q

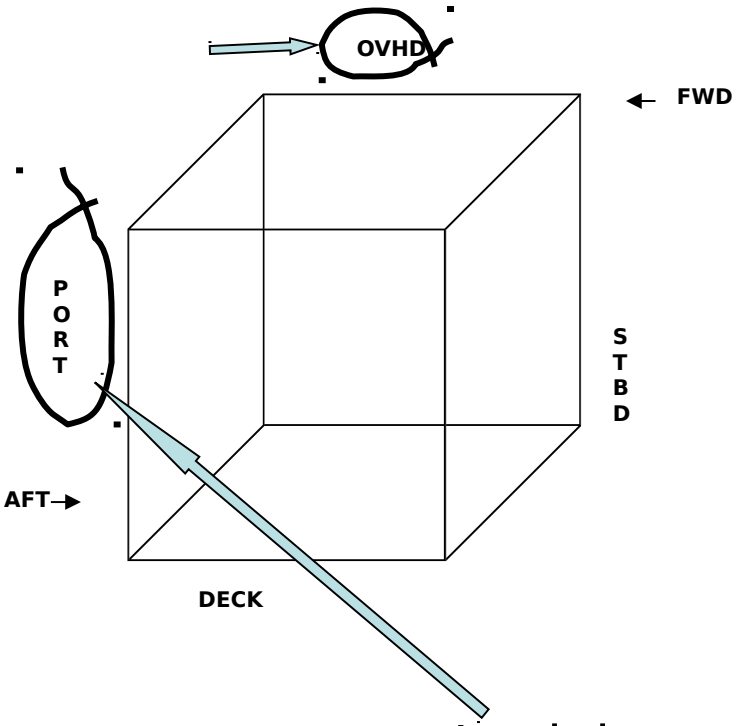
FRAME 60

REMARKS:



BOUNDARIES	S	P	P	S
FB - SB - FLB - CB				

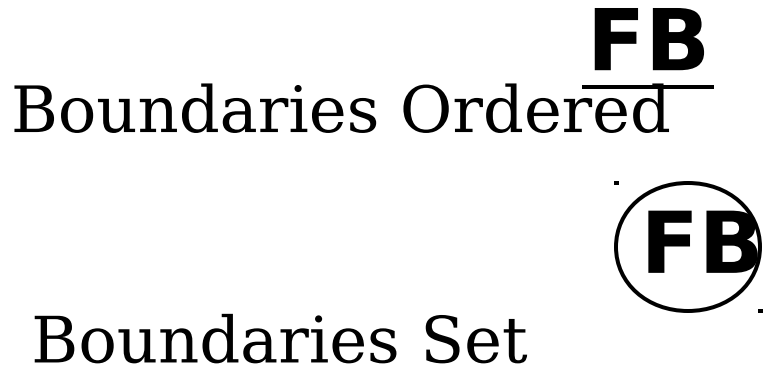
Leak is in the overhead.



Leak is on the port side of the space in the overhead.

Mechanics of plotting Boundaries

Three primary reports are recorded on the DC plates 2&3 that represent the two key events in setting Boundaries:



Mechanics of plotting Boundaries

FB - Fire Boundary: Primary and secondary around fire.

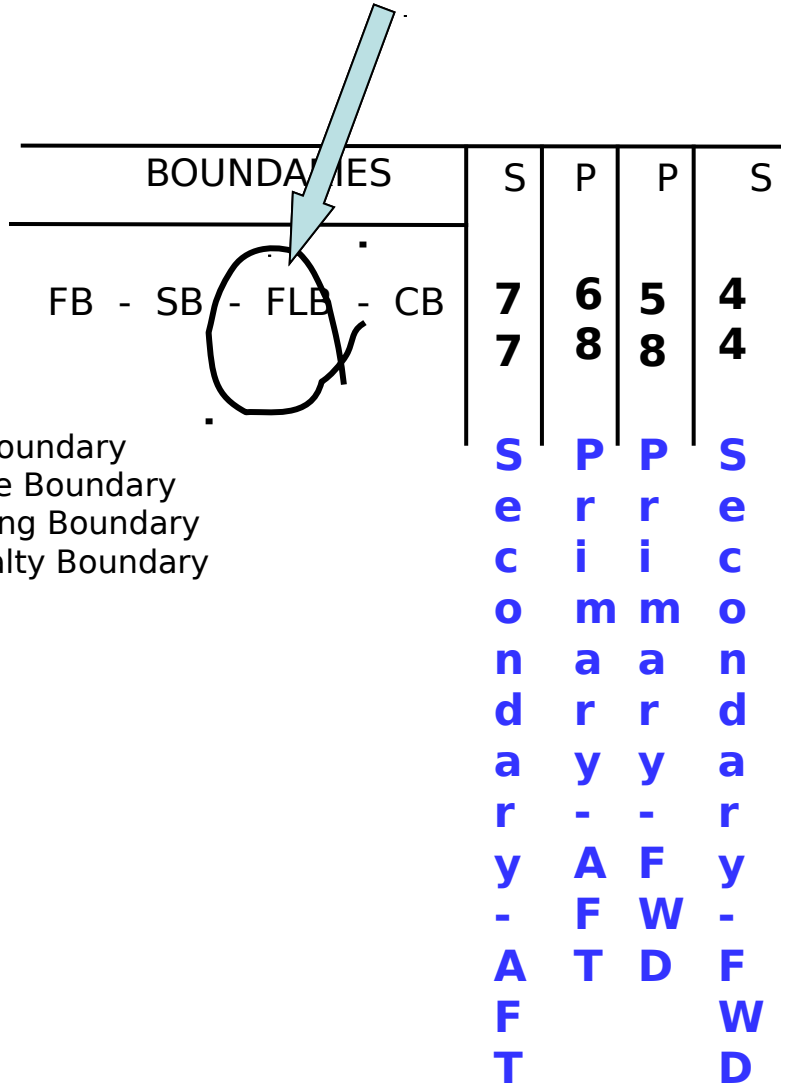
SB - Smoke Boundary: Smoke Primary and secondary around smoke.

FLB - Flooding Boundary: Flooding Boundary: Primary and secondary around Flooding.

CB - Casualty Boundary: Casualty Boundary: : Primary and secondary around multi casualty area. Example: A missile strikes the ship aft, casualty boundaries are set around the area.

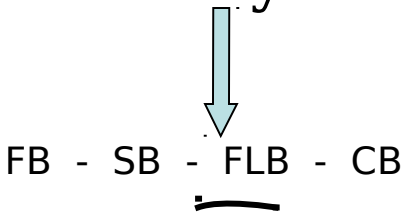
Boundaries

Flooding Boundary Set

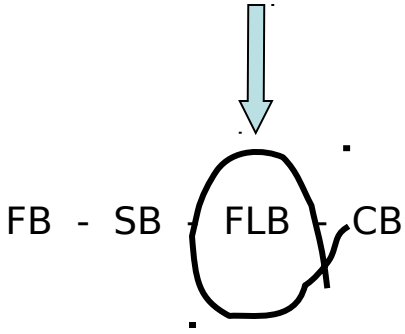


FB - Fire Boundary
SB - Smoke Boundary
FLB - Flooding Boundary
CB - Casualty Boundary

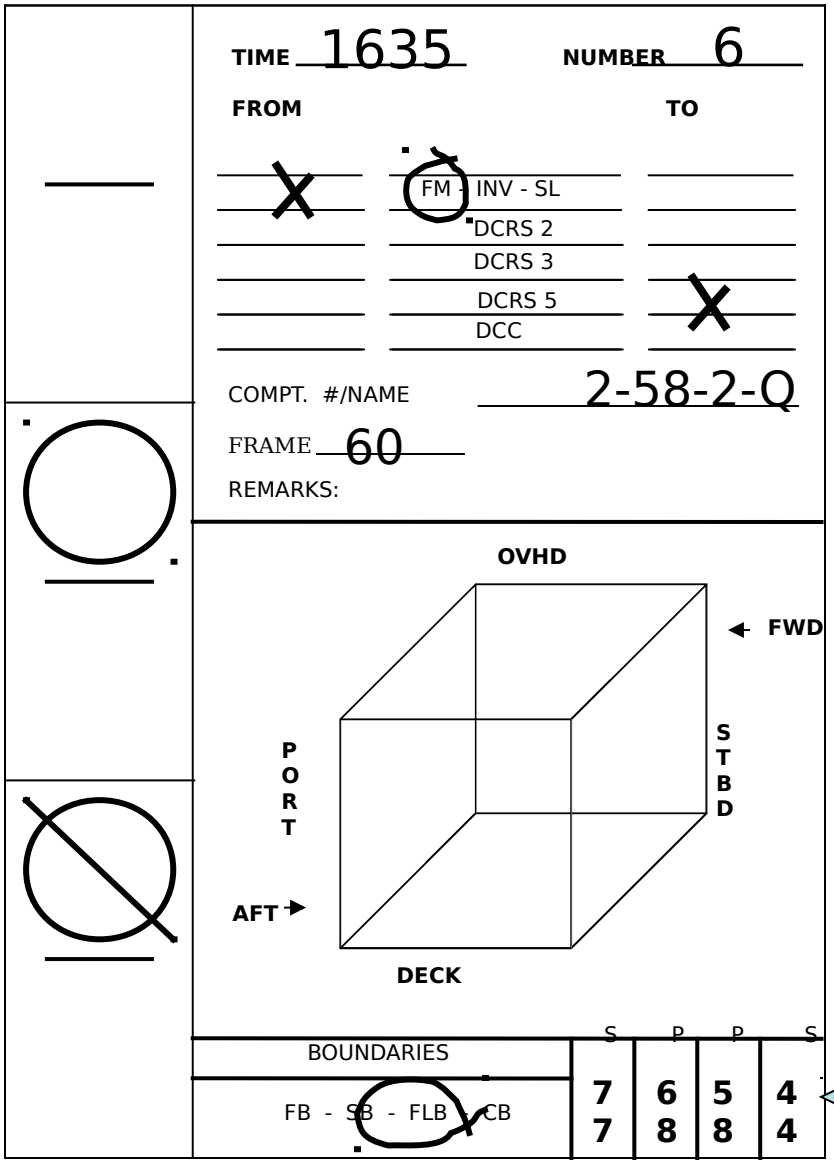
Boundaries **Ordered** indicated by dash



Boundaries **Set** indicated by circle

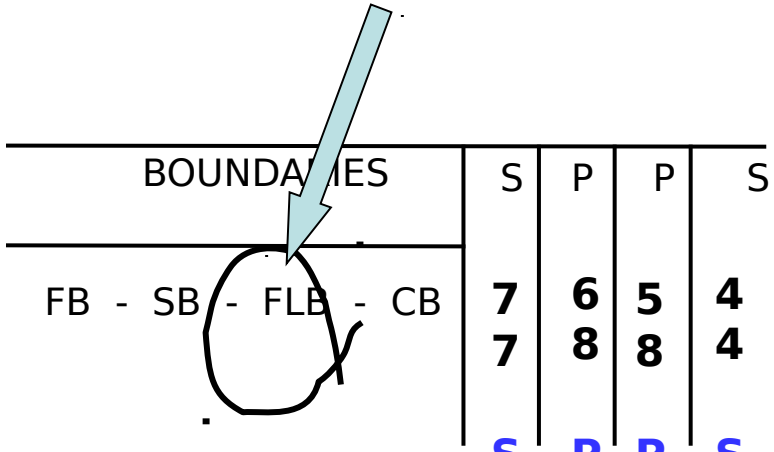


Boundaries



Boundaries section

Flooding Boundary Set

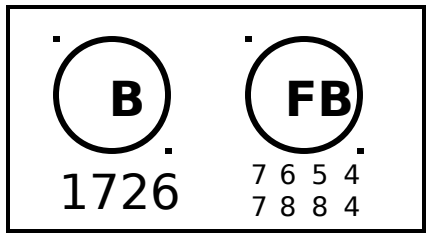


FB - Fire Boundary
SB - Smoke Boundary
FLB - Flooding Boundary
CB - Casualty Boundary

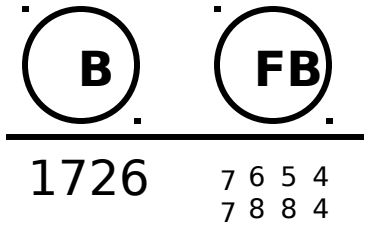
Secondary-AFT **Primary-AFT** **Primary-FWD** **Secondary-FWD**

Manual Plotting Methods

1. Box Method

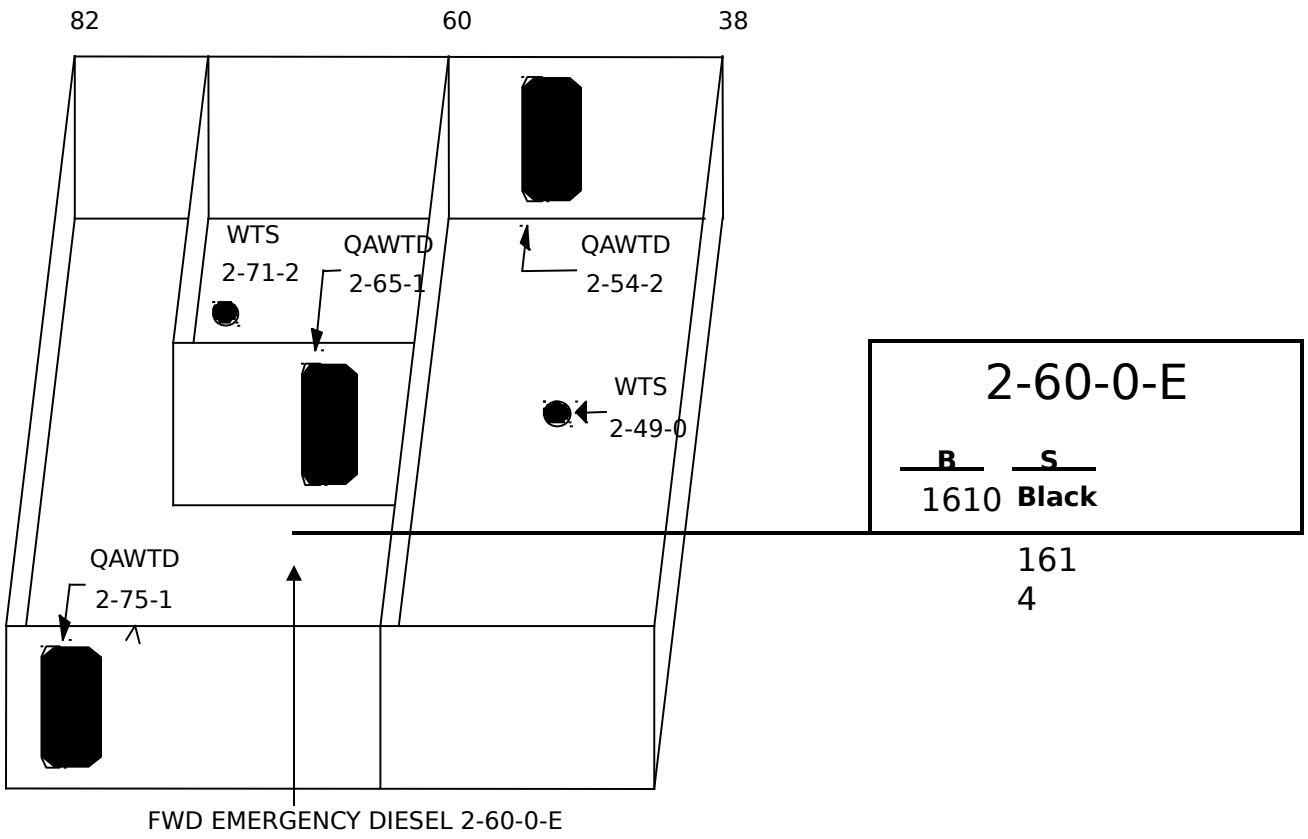


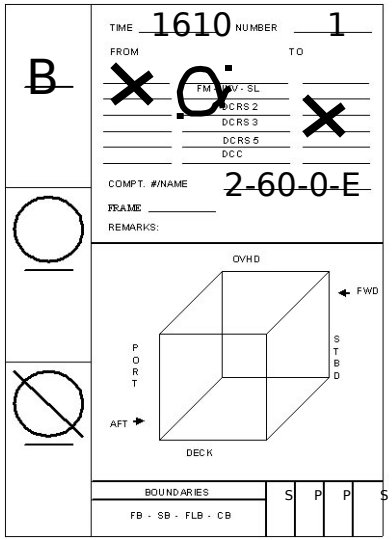
2. Line Method

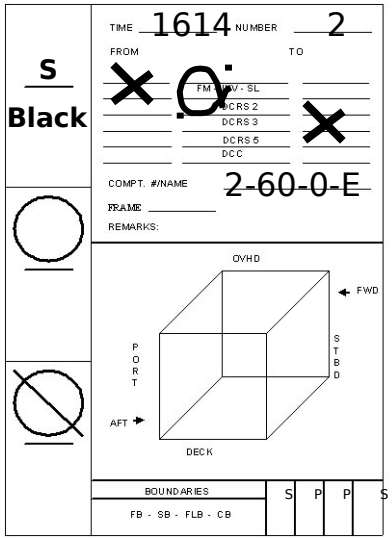


3. Column Method

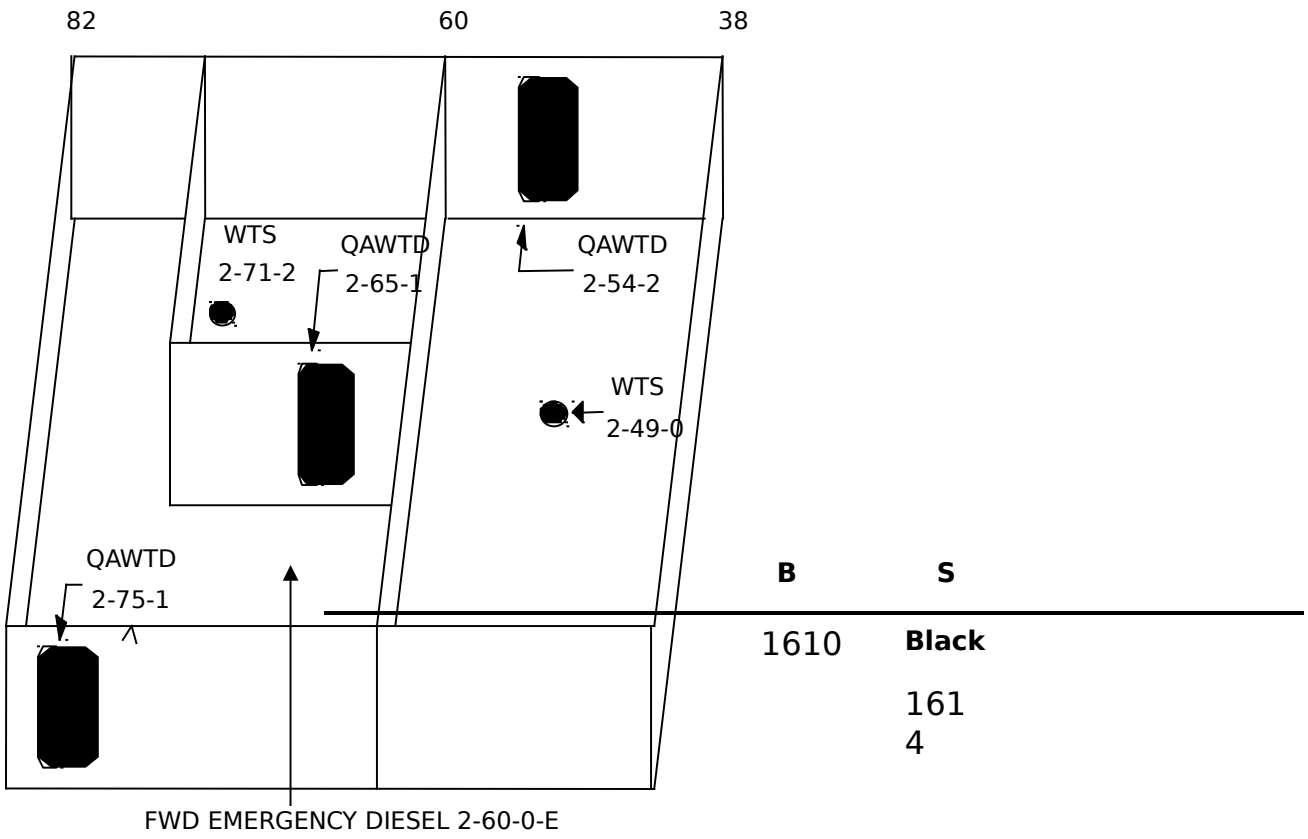
Box Method

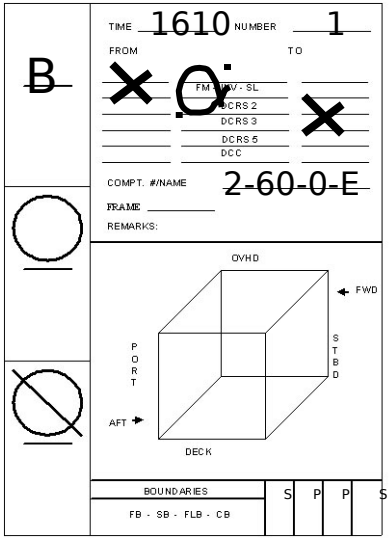

82
60
38
WTS
2-71-2
QAWTD
2-65-1
QAWTD
2-54-2
WTS
2-49-0
QAWTD
2-75-1
2-60-0-E
B
1610
S
Black
161
4
FWD EMERGENCY DIESEL 2-60-0-E

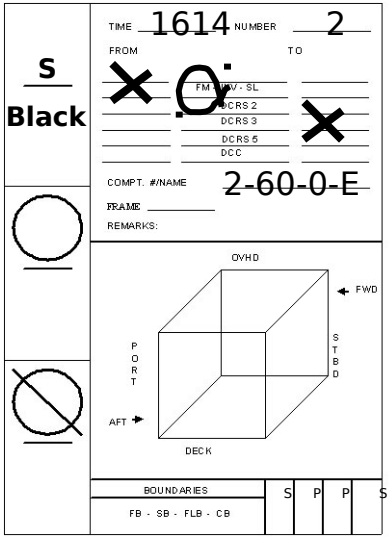

TIME 1610 NUMBER 1
FROM
TO
B
FM - DV - SL
DCRS 2
DCRS 3
DCRS 5
DCC
COMPT. #/NAME 2-60-0-E
FRAME
REMARKS:
OVHD
FWD
PORT
STBD
AFT
DECK
BOUNDARIES
FB - SB - FLB - CB
S P P S


TIME 1614 NUMBER 2
FROM
TO
S
Black
FM - DV - SL
DCRS 2
DCRS 3
DCRS 5
DCC
COMPT. #/NAME 2-60-0-E
FRAME
REMARKS:
OVHD
FWD
PORT
STBD
AFT
DECK
BOUNDARIES
FB - SB - FLB - CB
S P P S

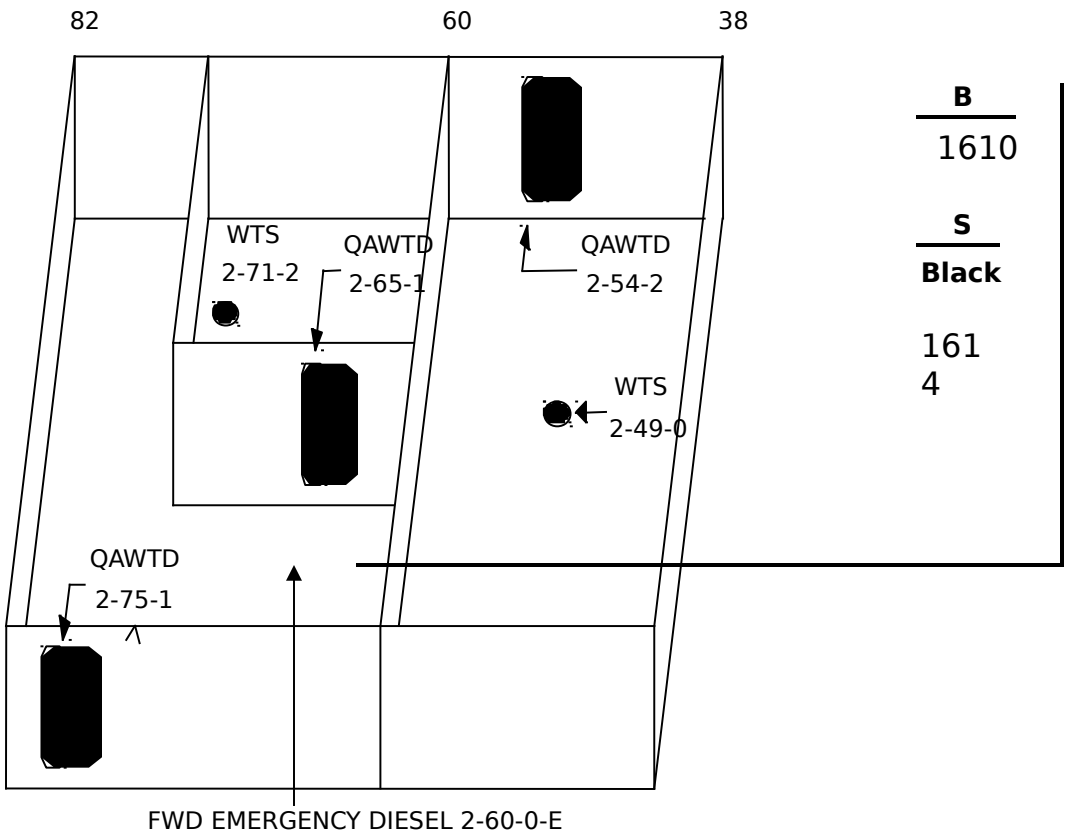
Line Method

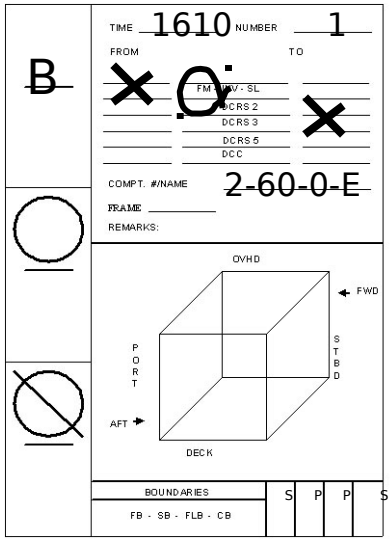

82
60
38
WTS
2-71-2
QAWTD
2-65-1
QAWTD
2-54-2
WTS
2-49-0
QAWTD
2-75-1
B
S
1610
Black
1614
FWD EMERGENCY DIESEL 2-60-0-E

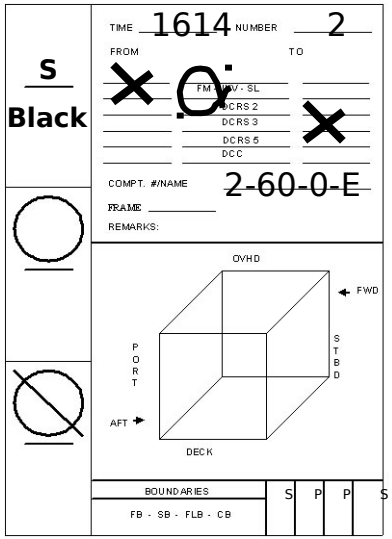

B
TIME 1610 NUMBER 1
FROM
TO
COMPT. #/NAME 2-60-0-E
FRAME
REMARKS:
OVHD
FWD
PORT
STBD
AFT
DECK
BOUNDARIES
FB - SB - FLB - CB
S P P S


S
Black
TIME 1614 NUMBER 2
FROM
TO
COMPT. #/NAME 2-60-0-E
FRAME
REMARKS:
OVHD
FWD
PORT
STBD
AFT
DECK
BOUNDARIES
FB - SB - FLB - CB
S P P S

Column Method



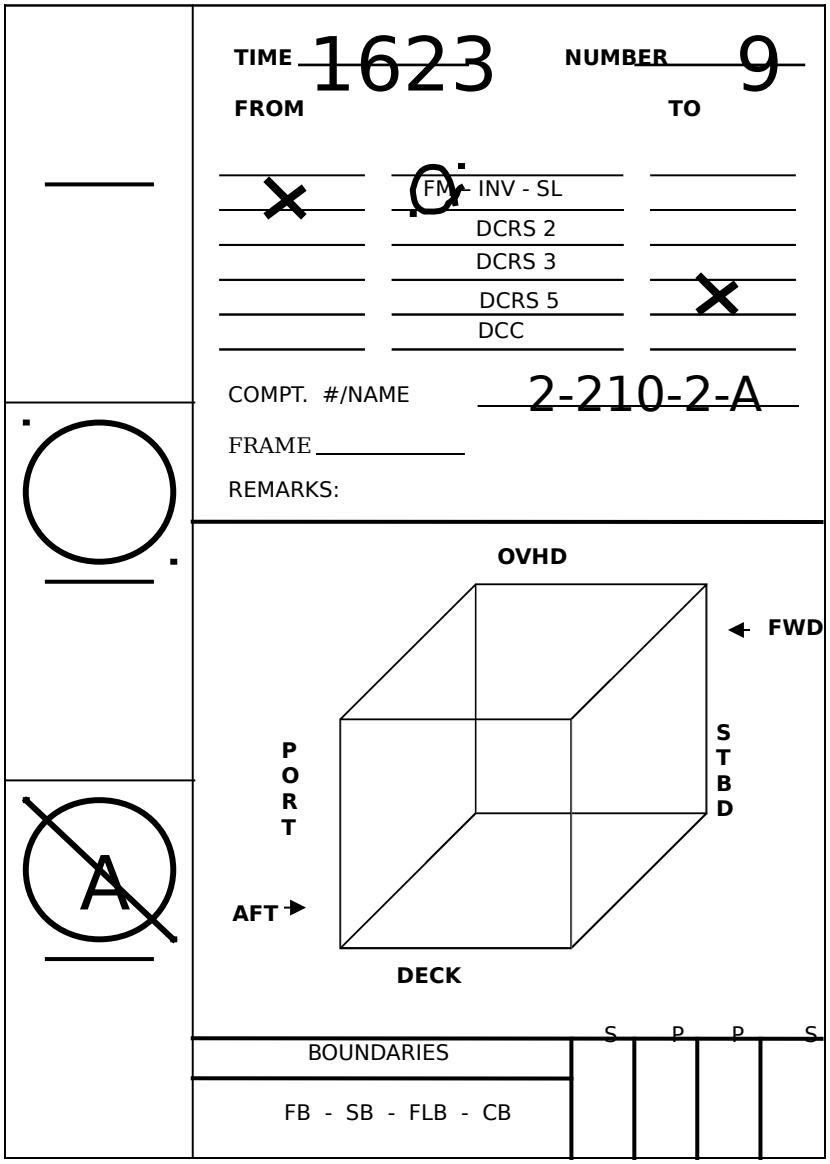




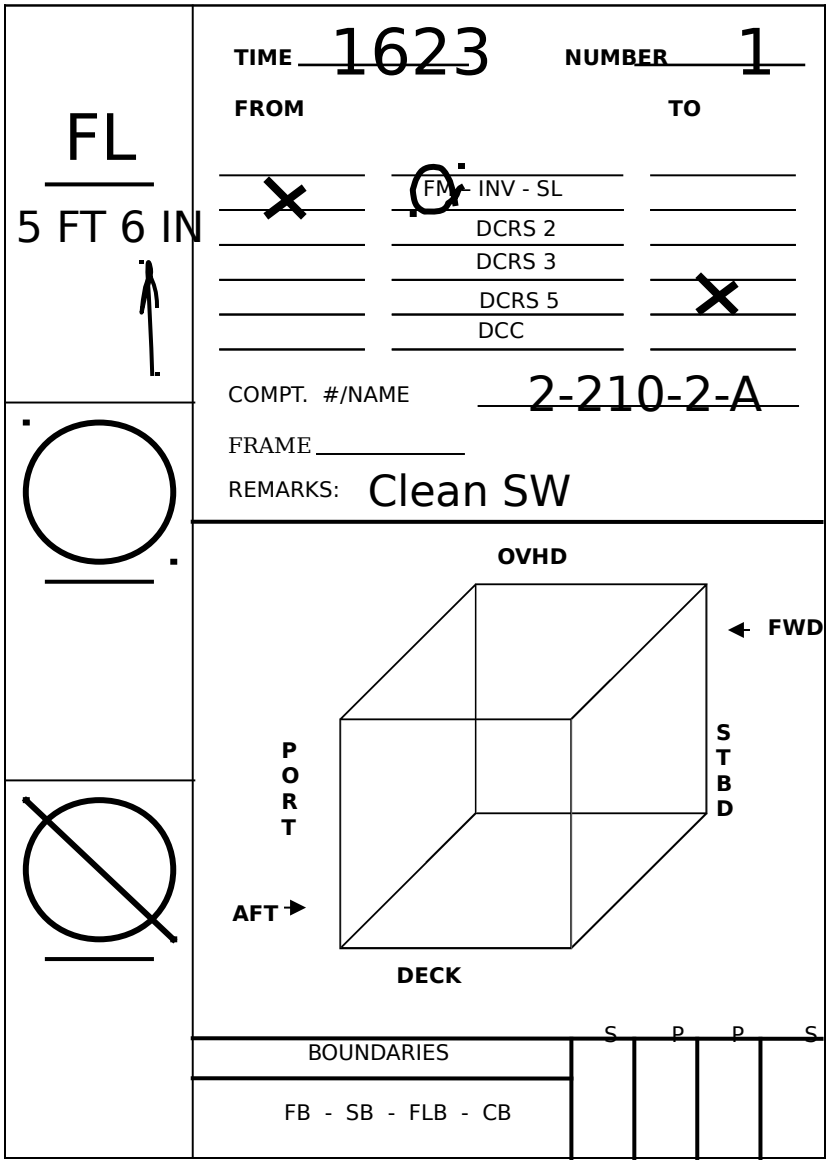
The following seven slides display message writing examples for:

- Fire
- Flooding (2)
- Ruptured Piping
- Structural Damage (2)
- Chemical Attack

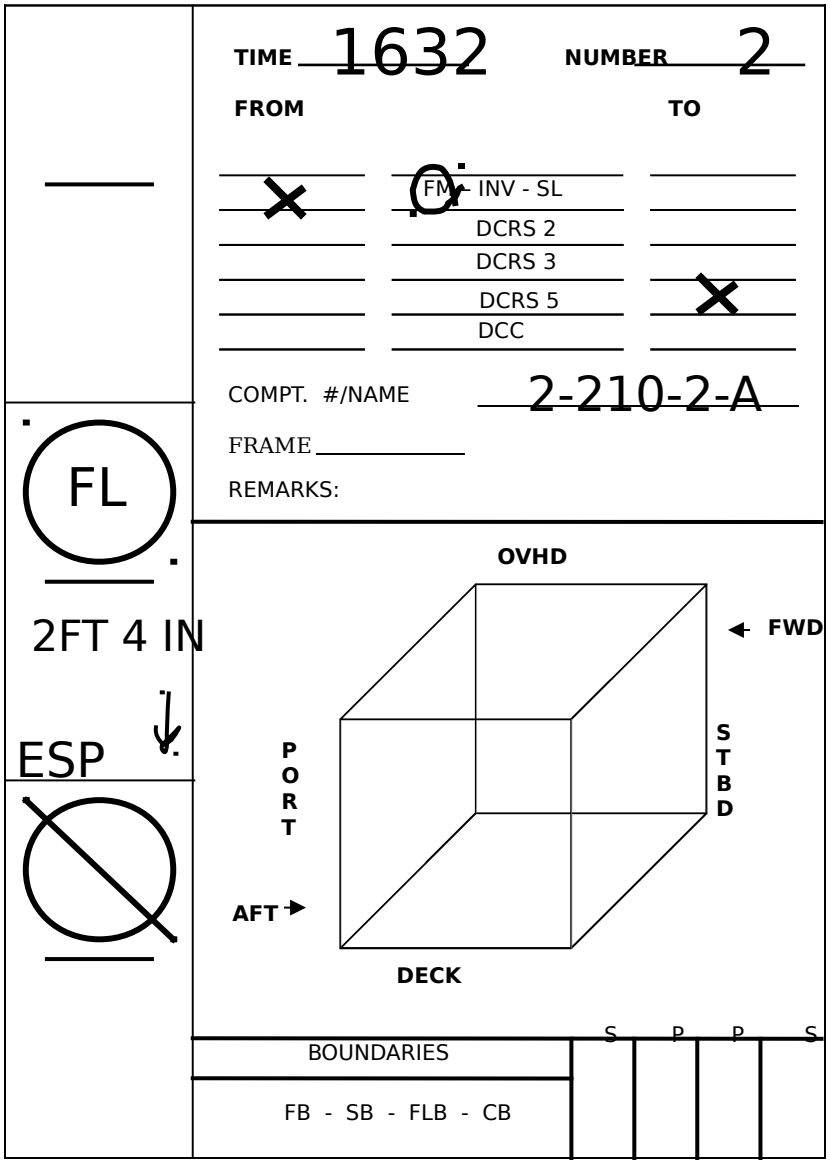
Fire


TIME 1623
NUMBER 9
FROM
TO
FM - INV - SL
DCRS 2
DCRS 3
DCRS 5
DCC
COMPT. #/NAME 2-210-2-A
FRAME
REMARKS:
OVHD
FWD
PORT
STBD
AFT
DECK
A
BOUNDARIES
FB - SB - FLB - CB
S P P S

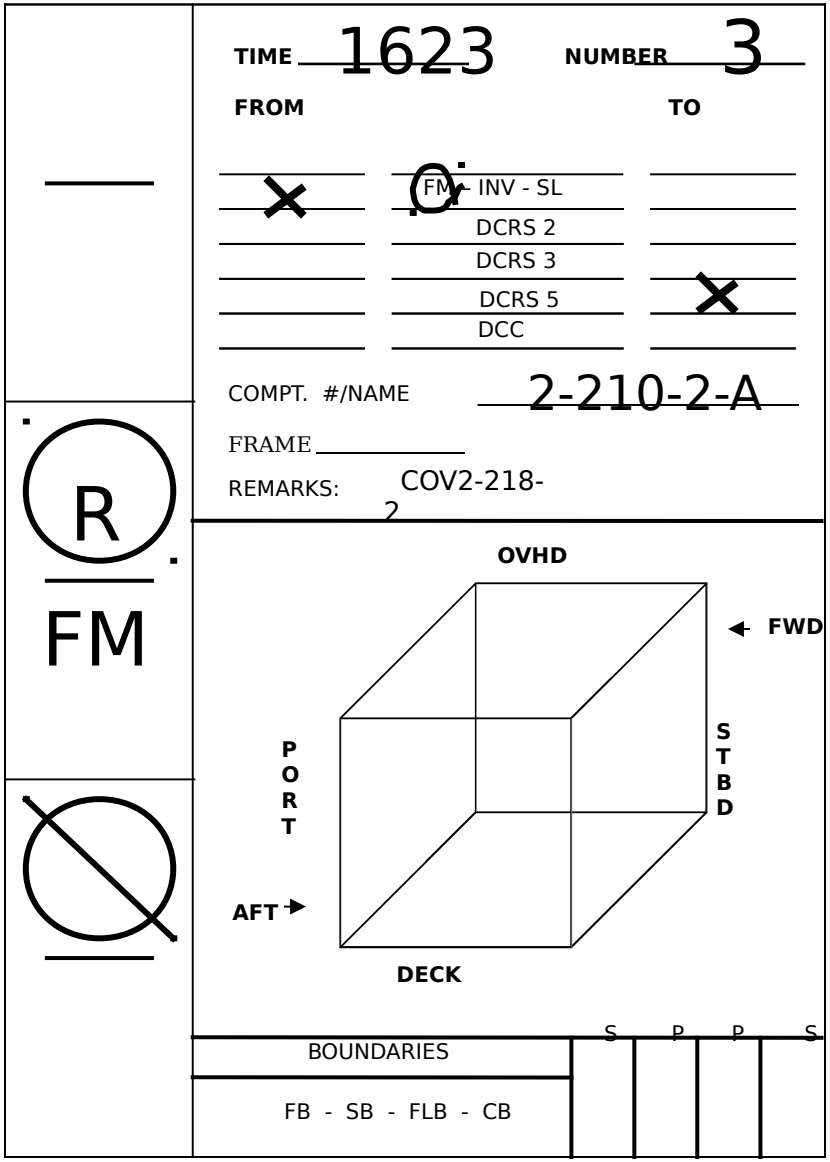
Flooding


TIME 1623
NUMBER 1
FROM
TO
FL
5 FT 6 IN
FM INV - SL
DCRS 2
DCRS 3
DCRS 5
DCC
COMPT. #/NAME 2-210-2-A
FRAME
REMARKS: Clean SW
OVHD
FWD
PORT
STBD
AFT
DECK
BOUNDARIES
FB - SB - FLB - CB
S P P S

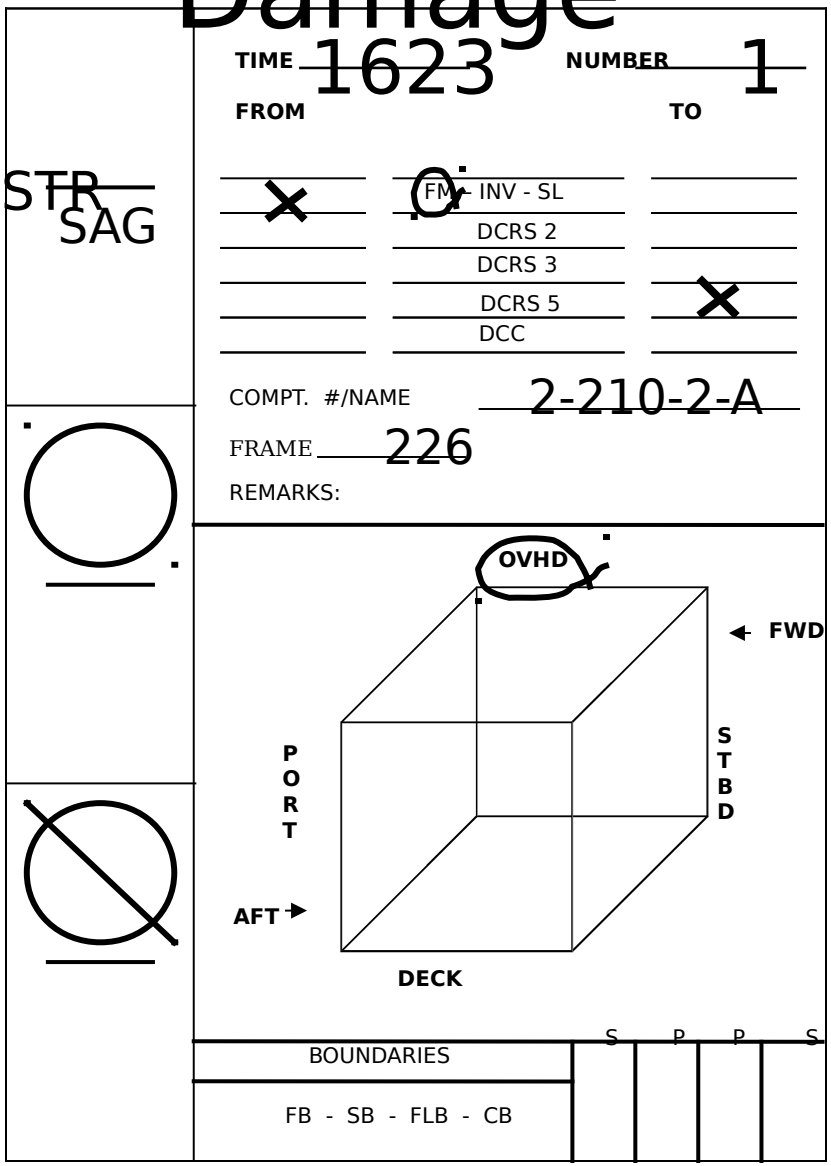
Flooding


TIME 1632
NUMBER 2
FROM
TO
FM INV - SL
DCRS 2
DCRS 3
DCRS 5
DCC
COMPT. #/NAME 2-210-2-A
FRAME
REMARKS:
FL
2FT 4 IN
ESP
OVHD
FWD
PORT
STBD
AFT
DECK
BOUNDARIES
FB - SB - FLB - CB
S P P S

Ruptured Piping



Structural Damage



Structural Damage

TIME 1623 NUMBER 2

FROM TO

FM - INV - SL

DCRS 2

DCRS 3

DCRS 5

DCC

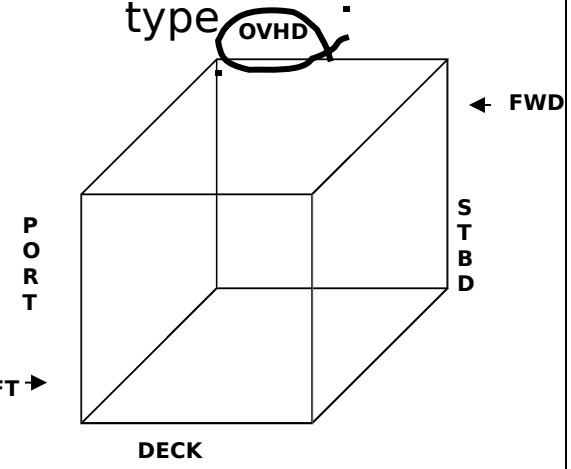
COMPT. #/NAME 2-210-2-A

FRAME 231

REMARKS: Steel Shoring I type

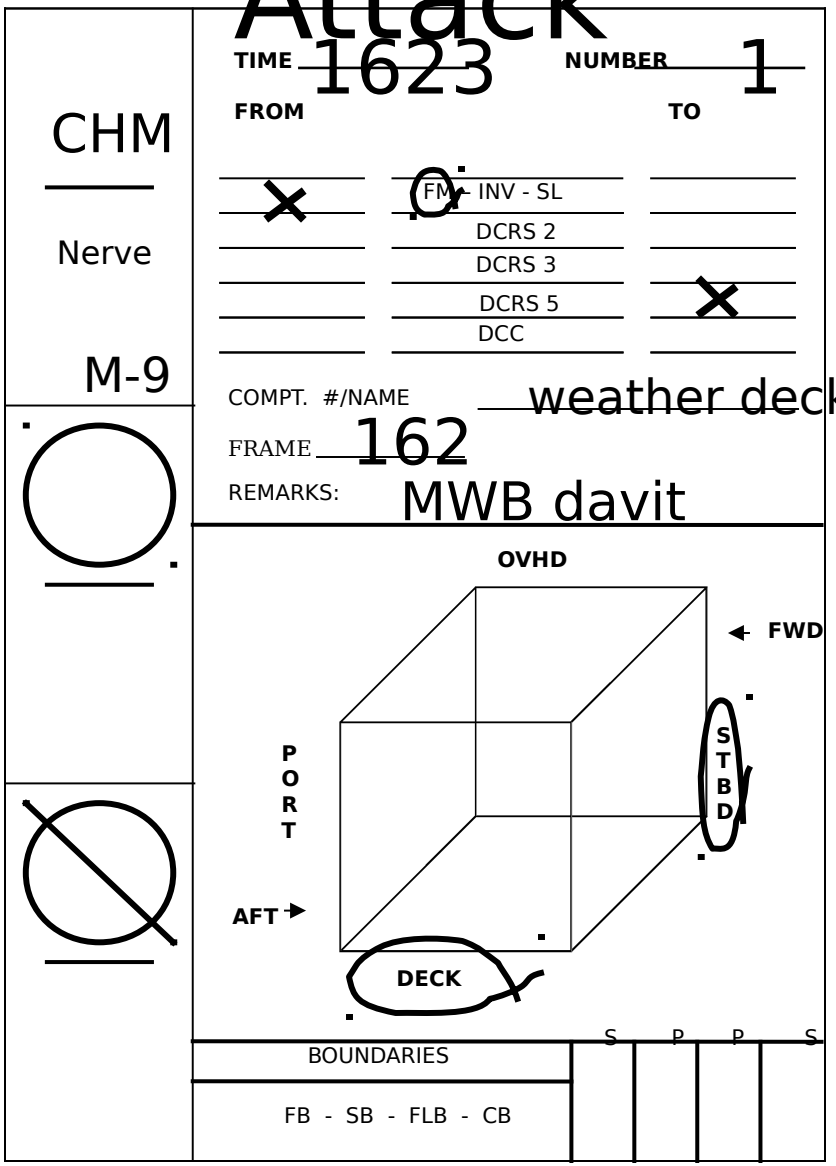
STR

Sag



BOUNDARIES	S	P	P	S
FB - SB - FLB - CB				

Chemical Attack



Summary

- Simple in concept
- User Friendly
- Supported by shipboard flag training kit.

- Provides a clear “Big Picture”
- Support transition from paper to standard e-Damage Control, DCAMS software, Laptops in DCRS, PDA’s at the scene and wireless data.